

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1-4. (Cancelled)

5. (Currently Amended) A method of making a rechargeable lithium battery comprising:

forming a positive electrode by physically mixing a positive active material with particles of an additive to prepare a positive active material composition, the positive active material being selected from the group consisting of lithiated transition metal compounds ~~metals~~, and the additive at least one selected from the group consisting of Si, B, Ge, Ga, Ca, Sr, Ba, and oxides thereof ~~one of Si, B, Ge, Ga, Ca, Sr and Ba and oxides thereof~~, coating the positive active material composition on a current collector after heat treating to place the positive active material in a uniform crystalline ~~form~~; form, and drying the current collector coated ~~with a~~ with the positive active material ~~slurry~~ composition including the particles of the additive mixed in the positive active material;

forming a negative electrode including a carbonaceous material as an active material;

preparing an electrolyte including an organic solvent including a lithium salt dissolved in the organic solvent;

wherein ~~the amount~~ an amount of the additive is 1.0 to 10 wt% of the positive active material, and the lithiated transition metal compound is selected ~~from~~ from the group consisting ~~of the~~ of formulas 1 to 13:

- $$\begin{aligned} \text{Li}_x\text{MnA}_2 & \quad (1) \\ \text{Li}_x\text{MnO}_{2-z}\text{A}_z & \quad (2) \\ \text{Li}_x\text{Mn}_{1-y}\text{M}'_y\text{A}_2 & \quad (3) \\ \text{Li}_x\text{Mn}_2\text{A}_4 & \quad (4) \\ \text{Li}_x\text{Mn}_2\text{O}_{4-z}\text{A}_z & \quad (5) \\ \text{Li}_x\text{Mn}_{2-y}\text{M}'_y\text{A}_4 & \quad (6) \\ \text{Li}_x\text{BA}_2 & \quad (7) \\ \text{Li}_x\text{BO}_{2-z}\text{A}_z & \quad (8) \\ \text{Li}_x\text{B}_{1-y}\text{M}''_y\text{A}_2 & \quad (9) \\ \text{Li}_x\text{B}_{1-y}\text{M}''_y\text{O}_{2-z}\text{A}_z & \quad (10) \\ \text{Li}_x\text{NiCoA}_2 & \quad (11) \\ \text{Li}_x\text{NiCoO}_{2-z}\text{A}_2 & \quad (12) \\ \text{Li}_x\text{Ni}_{1-y-z}\text{Co}_y\text{M}''_z\text{A}_2 & \quad (13) \end{aligned}$$

wherein $1.0 \leq x \leq 1.1$, $0.01 \leq y \leq 0.1$, $0.01 \leq z \leq 0.5$, M' is at least one transition metal or lanthanide metal selected from the group consisting of Al, Cr, Co, Mg, La, Ce, Sr and V, M'' is at least one transition metal or lanthanide metal selected from the group consisting of Al, Cr, Mn, Fe, Mg, La, Ce, Sr and V, A is selected from O, F, S or P, and B is Ni or Co.

6-8. (Cancelled)

9. (Currently Amended) The method of claim 5, wherein said organic solvent ~~comprises solvent~~ is N-methylpyrrolidone.

10-22. (Cancelled)

23. (Withdrawn) The method of claim 5 wherein the lithiated transition metal compound is a compound represented by formula: Li_xMnA_2

where $1.0 \leq x \leq 1.1$, and A is selected from O, F, S or P.

24. (Withdrawn) The method of claim 5 wherein the lithiated transition metal compound is a compound represented by formula: $\text{Li}_x\text{MnO}_{2-z}\text{A}_z$

where $1.0 \leq x \leq 1.1$, $0.01 \leq z \leq 0.5$, and A is selected from O, F, S or P.

25. (Withdrawn) The method of claim 5 wherein the lithiated transition metal compound is a compound represented by formula: $\text{Li}_x\text{Mn}_{1-y}\text{M}'_y\text{A}_2$

where $1.0 \leq x \leq 1.1$, $0.01 \leq y \leq 0.1$, $0.01 \leq z \leq 0.5$, M' is at least one transition metal or lanthanide metal selected from the group consisting of Al, Cr, Co, Mg, La, Ce, Sr and V, M'' is at least one transition metal or lanthanide metal selected from the group consisting of Al, Cr, Mn, Fe, Mg, La, Ce, Sr and V, and A is selected from O, F, S or P, and B is Ni or Co.

26. (Withdrawn) The method of claim 5 wherein the lithiated transition metal compound is a compound represented by formula: $\text{Li}_x\text{Mn}_2\text{A}_4$

where $1.0 \leq x \leq 1.1$, $0.01 \leq y \leq 0.1$, $0.01 \leq z \leq 0.5$, M' is at least one transition metal or lanthanide metal selected from the group consisting of Al, Cr, Co, Mg, La, Ce, Sr and V, M'' is at least one transition metal or lanthanide metal selected from the group consisting of Al, Cr, Mn, Fe, Mg, La, Ce, Sr and V, and A is selected from O, F, S or P, and B is Ni or Co.

27. (Withdrawn) The method of claim 5 wherein the lithiated transition metal compound is a compound represented by formula: $\text{Li}_x\text{Mn}_2\text{O}_{4-z}\text{A}_z$

where $1.0 \leq x \leq 1.1$, $0.01 \leq z \leq 0.5$, and A is selected from O, F, S or P.

28. (Withdrawn) The method of claim 5 wherein the lithiated transition metal compound is a compound represented by formula: $\text{Li}_x\text{Mn}_{2-y}\text{M}'_y\text{A}_4$

where $1.0 \leq x \leq 1.1$, $0.01 \leq y \leq 0.1$, M' is at least one transition metal or lanthanide metal selected from the group consisting of Al, Cr, Mn, Fe, Mg, La, Ce, Sr and V, and A is selected from O, F, S or P.

29. (Previously Presented) The method of claim 5 wherein the lithiated transition metal compound is a compound represented by formula: Li_xBA_2

where $1.0 \leq x \leq 1.1$, A is selected from O, F, S or P, and B is Ni or Co.

30 (Previously Presented) The method of claim 5 wherein the lithiated transition metal compound is a compound represented by formula: $Li_xBO_{2-z}A_z$

where $1.0 \leq x \leq 1.1$, $0.01 \leq z \leq 0.5$, A is selected from O, F, S or P, and B is Ni or Co.

31. (Previously Presented) The method of claim 5 wherein the lithiated transition metal compound is a compound represented by formula: $Li_xB_{1-y}M''_yA_2$

where $1.0 \leq x \leq 1.1$, $0.01 \leq y \leq 0.1$, M'' is at least one transition metal or lanthanide metal selected from the group consisting of Al, Cr, Mn, Fe, Mg, La, Ce, Sr and V, A is selected from O, F, S or P, and B is Ni or Co.

32. (Previously Presented) The method of claim 5 wherein the lithiated transition metal compound is a compound represented by formula: $Li_xB_{1-y}M''_yO_{2-z}A_z$

where $1.0 \leq x \leq 1.1$, $0.01 \leq y \leq 0.1$, $0.01 \leq z \leq 0.5$, M'' is at least one transition metal or lanthanide metal selected from the group consisting of Al, Cr, Mn, Fe, Mg, La, Ce, Sr and V, A is selected from O, F, S or P, and B is Ni or Co.

33. (Previously Presented) The method of claim 5 wherein the lithiated transition metal compound is a compound represented by formula: Li_xNiCoA_2

where $1.0 \leq x \leq 1.1$, and A is selected from O, F, S or P.

34. (Previously Presented) The method of claim 5 wherein the lithiated transition metal compound is a compound represented by formula: $\text{Li}_x\text{NiCoO}_{2-z}\text{A}_z$

where $1.0 \leq x \leq 1.1$, $0.01 \leq z \leq 0.5$, and A is selected from O, F, S or P.

35. (Previously Presented) The method of claim 5 wherein the lithiated transition metal compound is a compound represented by formula: $\text{Li}_x\text{Ni}_{1-y-z}\text{Co}_y\text{M}''_z\text{A}_2$

where $1.0 \leq x \leq 1.1$, $0.01 \leq y \leq 0.1$, $0.01 \leq z \leq 0.5$, M'' is at least one transition metal or lanthanide metal selected from the group consisting of Al, Cr, Mn, Fe, Mg, La, Ce, Sr and V, and A is selected from O, F, S or P.

36-37. (Cancelled)

38. (New) The method of claim 5, wherein the additive comprises at least one selected from the group consisting of Ge, Ga, Ca, Ba, and oxides thereof.

39. (New) The method of claim 5, wherein the additive comprises at least one selected from the group consisting of Ge and oxides of Ge.

40. (New) The method of claim 5, wherein the additive comprises at least one selected from the group consisting of Ga and oxides of Ga.

41. (New) The method of claim 5, wherein the additive comprises at least one selected from the group consisting of Ca and oxides of Ca.

42. (New) The method of claim 5, wherein the additive comprises at least one selected from the group consisting of Ba and oxides of Ba.

43. (New) A method of making a lithium battery comprising:

forming a positive electrode by heat treating a positive active material to place the positive active material in a uniform crystalline form, physically mixing the positive active material with particles of an additive to prepare a positive active material composition, coating the positive active material composition on a current collector, and drying the current collector coated with the positive active material composition including the particles of the additive mixed in the positive active material, wherein the positive active material comprises at least one lithiated transition metal compound, wherein the additive comprises at least one selected from the group consisting of Si, B, Ge, Ga, Ca, Sr, Ba, and oxides thereof, and wherein an amount of the additive is 1.0 to 10 wt% of the positive active material;

forming a negative electrode including a carbonaceous material as an active material; and

preparing an electrolyte including an organic solvent including a lithium salt dissolved in the organic solvent.

44. (New) The method of claim 43, wherein the additive comprises at least one selected from the group consisting of Ge, Ga, Ca, Ba, and oxides thereof.

45. (New) The method of claim 44, wherein the additive comprises at least one selected from the group consisting of Ge, Ga, Ba, and oxides thereof.